

註:本次考試 不可以參考自己的書籍及筆記; 不可以使用字典; 不可以使用計算器。

每位考生必須選4題作答,每題25分。

下面1-3題請任選2題翻譯成中文:

1. Chemistry is sometimes called the central science because it relates to so many other fields of science and to so many areas of human endeavor. Chemists who develop new materials to improve electronic devices— such as solar cells, transistors, and fiber-optical cables—work at the interfaces of chemistry with physics and engineering. Those who develop new pharmaceuticals for use against cancer or AIDS work at the interfaces of chemistry with pharmacology and medicine. Many of the techniques developed by analytic chemists are used extensively by environmental scientists. Organic chemists focus their attention on substances that contain carbon and hydrogen in combination with a few other elements. The vast majority of substances are organic chemicals. For example, a living cell consists of water and organic chemicals with a small amount of various salts.
2. What do chemical engineers do? Although their backgrounds and professional skills are similar, chemical engineers work in a wide variety of industries. They focus on design, operation, control, troubleshooting, research, management, and even politics – the latter because of environmental and economic concerns.
3. Among the metals, aluminum alloys are excellent examples of recycling. The energy requirement for aluminum recycling is small in comparison to that for initial production. Many other alloys are also recyclable. Difficult-to-recycle metals are often the result of design configurations more than the nature of an isolated alloy. In general, dissimilar materials combinations are a challenge for recycling.

下面4-6題請任選2題翻譯成英文:

4. 水通常含有不純物,不適合做某些用途。如:化學家通常不會用普通的自來水來製備硝酸銀的水溶液。水的純化方式與它將如何使用或已被如何用过有關。如在某些工業用水可能要比家庭用水需要不同的前處理。同時,用於化學工廠的水,在使用後,可能比家庭污水更需要不同的處理。
5. 綠色化學是指設計化學產品時,只要可能,不論原料、中間產物和最終產品,均應對人體健康和環境無毒及無害。在生產過程中,基於環保考量,透過科技,以清潔生產機制(cleaner production)力求資源使用上的節約以及污染減少的產業,我們即可稱其為綠色產業。
6. 過去30年來,“材料科學與工程”已經成為工程領域的一部分。它結合了基礎科學研究與實際工程應用,而將許多傳統領域,如冶金、陶瓷工程、高分子化學、固態物理及物理化學納入其範圍。